

UNIVERSIDAD DE CASTILLA - LA MANCHA

GUÍA DOCENTE

1. General information

Course: VIDEO	GAMES AND VIRTUAL REAL	ITY		Code: 42379			
Type: ELECT	TIVE		E	ECTS credits: 6			
Degree: 406 - UNDERGRADUATE DEGREE IN CC ENGINEERING (AB)			UTER SCIENCE AND Ac	ademic year: 2022-23			
Center: 604 - SCHOOL OF COMPUTER SCIENCE			ND ENGINEERING (AB) Group(s): 17				
Year: 4			Duration: C2				
Main language: English			Second language: Spanish				
Use of additional languages:			English Friendly: N				
Web site: Bilingual: N							
.ecturer: JOSE PASCUAL MOLINA MASSO - Group(s): 17							
Building/Office	Department	Phone number	Email	Office hours			
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2. Pre-Requisites

Not specified.

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3. Justification in the curriculum, relation to other subjects and to the profession

This subject is part of the group of subjects "Graphic Design and Videogames", devoted to providing the students with the basic skills needed to develop a computer videogame. The other subjects are "Artificial Intelligence for Videogames", "Graphics Accelerators", "Graphic Design and Animation", and "Videogames and Virtual Reality". Every one of those subjects approaches this topic from a different point of view but in such a way that those students that follow all these courses can have a complete vision of the main techniques required to develop a videogame. In any case, each subject is an independent unit, what means that a student can take full advantage of the topics covered in one subject without taking the other courses.

4. Degree competence	s achieved in this course
Course competences	
Code	Description
CM06	Ability to develop and assess interactive systems, and present complex information and its application in the solution of problems with the design of person-computer interaction.
INS02	Organising and planning skills.
INS05	Argumentative skills to logically justify and explain decisions and opinions.
PER02	Ability to work in multidisciplinary teams.
PER03	Ability to work in an international context.
PER05	Acknowledgement of human diversity, equal rights, and cultural variety.
TI06	Ability to foster systems, applications, and services based on network technologies, including the internet, web, electronic commerce, mulimedia, interactive sercices, and mobile computation.
UCLM01	Command of a second language at a B1 level within the Common European Framework of Reference for Languages

5. Objectives or Learning Outcomes

Course learning outcomes

Description

Understanding of the possibilities and limits of virtual reality technologies, and the importance of the human factor within them.

Understanding of the existing techniques and their appropriate application.

Development of virtual reality applications, in particular video games that use these technologies, for one or more users, in the same or several computers connected in a local network or through the Internet.

6. Units / Contents

Unit 1: From videogames to virtual reality.

- Unit 2: The development process: methods and programming.
- Unit 3: Mathematics for videogames.
- Unit 4: Input devices.
- Unit 5: Physics in videogames.

Unit 6: Multi-user worlds and games.

- Unit 7: Graphics displays.
- Unit 8: Sound displays.
- Unit 9: Haptic displays.

7. Activities, Units/Modules and M	Methodology							
Training Activity	Methodology	Related Competences (only degrees before RD 822/2021)	ECTS	Hours	As	Com	Description	
Class Attendance (theory) [ON- SITE]	Combination of methods	CM06 TI06 UCLM01	0.56	14	Y	N		
Class Attendance (practical) [ON- SITE]	Guided or supervised work	CM06 TI06 UCLM01	0.76	19	Y	N	Tutorials	
Study and Exam Preparation [OFF- SITE]	Self-study	CM06 TI06 UCLM01	0.32	8	Y	N	Individual exercises and/or assignments	
Study and Exam Preparation [OFF- SITE]	Self-study	CM06 TI06 UCLM01	0.48	12	Y	N	Study or preparation for tests	
Writing of reports or projects [OFF- SITE]	Group Work	CM06 INS02 PER02 PER03 PER05 TI06 UCLM01	0.32	8	Y	N	Project proposal development	
Project or Topic Presentations [ON- SITE]	Assessment tests	CM06 INS05 TI06 UCLM01	0.02	0.5	Y	N	Project proposal presentation	
Computer room practice [ON-SITE]	Group Work	CM06 INS02 PER02 PER03 PER05 TI06 UCLM01	1	25	Y	N	Project development at laboratory	
Writing of reports or projects [OFF- SITE]	Group Work	CM06 INS02 PER02 PER03 PER05 TI06 UCLM01	2	50	Y	N	Project development at home	
Project or Topic Presentations [ON- SITE]	Assessment tests	CM06 INS05 TI06 UCLM01	0.02	0.5	Y	N	Alpha build demo	
Project or Topic Presentations [ON- SITE]	Assessment tests	CM06 INS05 TI06 UCLM01	0.02	0.5	Y	N	Beta build demo	
Writing of reports or projects [OFF- SITE]	Group Work	CM06 INS02 PER02 PER03 PER05 TI06 UCLM01	0.48	12	Y	N	User's guide	
Project or Topic Presentations [ON- SITE]	Assessment tests	CM06 INS05 TI06 UCLM01	0.02	0.5	Y	N	Final demo	
		Total:	6	150				
Total credits of in-class work: 2.4					Total class time hours: 60			
Total credits of out of class work: 3.6							Total hours of out of class work: 90	

As: Assessable training activity

Com: Training activity of compulsory overcoming (It will be essential to overcome both continuous and non-continuous assessment).

8. Evaluation criteria and Grading System					
Evaluation System	Continuous assessment	Non- continuous evaluation*	Description		
Projects	35.00%	35.00%	Individual exercises and/or assignments		
Theoretical papers assessment	5.00%	5.00%	Team's class project proposal		
Oral presentations assessment	5.00%	5.00%	Team's class project proposal		
Oral presentations assessment	10.00%	0.00%	Team's alpha build demo		
Oral presentations assessment	10.00%	0.00%	Team's beta build demo		
Practicum and practical activities reports assessment	5.00%	5.00%	User's guide of team's class project		
Oral presentations assessment	30.00%	50.00%	Team's final demo		
Total	100.00%	100.00%			

According to art. 4 of the UCLM Student Evaluation Regulations, it must be provided to students who cannot regularly attend face-to-face training activities the passing of the subject, having the right (art. 12.2) to be globally graded, in 2 annual calls per subject, an ordinary and an extraordinary one (evaluating 100% of the competences).

Evaluation criteria for the final exam:

Continuous assessment:

Individual exercises and/or assignments.

Class project, developed in teams.

Non-continuous evaluation:

By default, the student will be evaluated by continuous evaluation. If he/she wish to change to non-continuous evaluation, he/she must indicate it through the following link https://www.esiiab.uclm.es/alumnos/evaluacion.php before the end of the semester.

The student can transfer to this evaluation points obtained in previous evaluation tests. In the tests that the student wants to improve in order to pass or obtain a higher grade, the work already done will not be reevaluated but, instead, the complete test has to be repeated, presenting -where appropriate-different works to those already delivered.

In team tests, in case the student cannot be part of a team, they will take them individually.

Specifications for the resit/retake exam:

Same as in non-continuous evaluation.

Specifications for the second resit / retake exam:

Same as in non-continuous evaluation.

Hours	hours
Writing of reports or projects [AUTÓNOMA][Group Work]	8
Project or Topic Presentations [PRESENCIAL][Assessment tests]	.5
Computer room practice [PRESENCIAL][Group Work]	25
Writing of reports or projects [AUTONOMA][Group Work]	50
Project of Topic Presentations [PRESENCIAL][Assessment tests]	.5 F
Project of Topic Presentations [PRESENCIAL][Assessment tests]	.5
Project or Tonic Presentations [PRESENCIAL][Gloup Work]	5
General comments about the planning: This course schedule is APPROXIMATE. It could vary throughout the academic course	 due to teaching needs, bank
holidays, etc. A weekly schedule will be properly detailed and updated on the online platform (Campus Virtual). Classes will take	place in three sessions of 1.5
hours a week until programmed total is completed. Note that all the lectures, practice sessions, exams and related activities perfo	ormed in the bilingual groups
will be entirely taught in English.	
Unit 1 (de 9): From videogames to virtual reality.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	2
Study and Exam Preparation [AUTONOMA][Self-study]	1
Teaching period: Week 1	
Unit 2 (de 9): The development process: methods and programming.	
	Hours
Class Attendance (neery) [PRESENCIAL][Combination of methods]	3
Class Allendarice (practical) [FIESEINCIAL][Guided of supervised work]	4
Study and Exam Preparation [AUTÓNOMAI[Self-study]	2
Teaching period: Weeks 2.3 and 4	2
Unit 3 (de 9): Mathematics for videogames	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	1
Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Teaching period: Week 5	
Unit 4 (de 9): Input devices.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	2
Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	7
Study and Exam Preparation [AUTÓNOMA][Self-study]	4
Study and Exam Preparation [AUTÓNOMA][Self-study]	3
Teaching period: Weeks 5, 6, 7, 8, and 9	
Unit 5 (de 9): Physics in videogames.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	1
[Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	2
Study and Exam Preparation [AUTONOMA][Self-study]	1
Teaching period: weeks 9 and 10	
Unit 6 (de 9): Multi-user worlds and games.	
ACTIVITIES	Hours
	2
Class Allendarice (practical) [FIESEINCIAL][Guided of supervised work]	1
Teaching period: Weeks 10 and 11	
Unit 7 (de 9): Granbics displays	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	2
Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Teaching period: Week 12	
Unit 8 (de 9): Sound displays.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	1
Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	1
Study and Exam Preparation [AUTÓNOMA][Self-study]	1
Teaching period: Week 13	
Unit 9 (de 9): Haptic displays.	
Activities	Hours
Class Attendance (theory) [PRESENCIAL][Combination of methods]	1
Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	1
Study and Exam Preparation [AUTONOMA][Self-study]	1
	houre
Study and Exam Preparation [AI ITÓNOMAI[Self-study]	hours 8

Class Attendance (practical) [PRESENCIAL][Guided or supervised work]	19	
Writing of reports or projects [AUTÓNOMA][Group Work]	8	
Project or Topic Presentations [PRESENCIAL][Assessment tests]	0.5	
Computer room practice [PRESENCIAL][Group Work]	25	
Writing of reports or projects [AUTÓNOMA][Group Work]	50	
Project or Topic Presentations [PRESENCIAL][Assessment tests]	0.5	
Project or Topic Presentations [PRESENCIAL][Assessment tests]	0.5	
Writing of reports or projects [AUTÓNOMA][Group Work]	12	
Project or Topic Presentations [PRESENCIAL][Assessment tests]	0.5	
Class Attendance (theory) [PRESENCIAL][Combination of methods]	14	
Study and Exam Preparation [AUTÓNOMA][Self-study]	12	
	Total horas: 150	

10. Bibliography and Sources						
Author(s)	Title/Link	Publishing house	Citv	ISBN	Year	Description
Burdea, Grigore C.	Virtual reality technology	J. Wiley- Interscience		0-471-36089-9	2003	
	http://www.vrtechnology.org/					
Rucker, R.	Software Engineering and Computer Games	Addison- Wesley	,		2002	
	http://www.rudyrucker.com/computergames/					
	Desarrollo de videojuegos : un enfoque práctico /	EdLibrix,		978-84-942382-9-1	2014	
Murray, Jeff W.	Building virtual reality with Unity and SteamVR /	CRC,		978-1-138-05124-9	2017	